Space Weather Forecast

Issued on Tuesday, 28 May 2024 at 13:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Ongoing likelihood of further Moderate to Strong flares.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Activity has been Low with frequent Common class flares. There are ten regions currently on the visible disc, most of which are small and relatively simple. The largest region on the disc is a magnetically complex region in the northeast. A previously hyperactive sunspot from last rotation is in the process of emerging from the southeast limb and is impossible to analyse accurately at this point, as much of the region remains beyond the limb. Some minimal growth has also been observed elsewhere on the disc.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed, with all previous observed CMEs assessed as missing.

Solar Wind / Geomagnetic Activity: Solar wind speeds, were at, or close to, slightly elevated levels initially with speeds of 400-440km/s. Winds eased to background levels around 27/1350 UTC where they have since largely remained and are now around 340 km/s. The Interplanetary Magnetic Field (IMF) was weak with the north-south component also weakly varying, but favouring a negative (southward) orientation until around 28/0120 after which a more positive (northward) orientation has prevailed. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary
Solar Activity: Moderate to High activity is expected with a likelihood of further Moderate class flares, and a chance of isolated Strong-class flares. These most likely from the returning spot, now on the southeast limb, which produced a Strong flare early on 27 May. A moderately sized spot in the northeast also has the potential to produce Moderate to Strong flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed Coronal Mass Ejections (CMEs). Solar winds may see a brief increase on Day 1 (28 May) or possibly early Day 2 (29 May) should a stream of fast winds from a coronal hole connect with Earth. However, only a limited enhancement is likely, with solar winds perhaps reaching 400-450km/s, before easing back to background Day 2 onward. Any enhancement is low confidence, with background winds likely to persist. Mainly Quiet (Kp 0-2) geomagnetic activity expected with Unsettled (Kp 3) intervals, greatest chance on Day 1 should the fast wind arrive.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring. This is despite the potential for Strong flares, with both sunspots in a less likely position

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	75	75	70	70
Very Active	R3 to R5 X	No	25	25	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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